WORK TABLE

[0001] The invention relates to a work table. It relates in particular to a work table for the workshop area.

[0002] Work tables in the workshop area, but also in all other areas in which work tables are used, are utilized on the one hand for receiving the tool and/or the working means, and on the other hand for receiving and/or setting down the material to be worked. In the workshop area, the tools are frequently securely mounted on the worktop of the work table. However, the mounting of tools on the work table inevitably leads to a reduction in the surface of the work table that is then available for the materials to be worked.

[0003] Moreover, a plurality of different tools, for example woodworking, metalworking or other machining tools or equipment, are required in particular in workshops, so that an appropriately large working surface is required on the one hand for the tools alone, and on the other hand for the materials to be worked. The working surface is not usually adequate for this reason.

[0004] A solution to this problem often involves the use of smaller, and thus more mobile variants of the individual tools. Tools of this kind are subject to performance limitations, however, so that their use is not actually possible in the professional area.

[0005] Previously disclosed by DE 41 06 073 C2 is a work table, which exhibits a recess in a worktop, in which recess different tools arranged on a worktop segment can be mounted or added by means of a rotating mechanism. Although a much more favorable utilization of the surface of a work table is achieved in this way,

the associated cost is comparatively high, namely when the envisaged machine magazine is embodied as a rotary magazine. Consideration must also be given to the fact that only a single working machine can be brought into the plane of the worktop of the work table in each case.

[0006] A further solution involves mounting only the tool that is required in each case on the work table. The replacement of a tool in this case is time-consuming, however, so that a dedicated work table is required as a general rule for each tool.

[0007] The object of the invention is to overcome the disadvantages associated with the prior art. The intention in particular is to propose a work table which permits the use of two or more tools on a small work surface, compared with the prior art.

[0008] This object is achieved by the characterizing features of Claim 1. Appropriate embodiments can be appreciated from the characterizing features of Claims 2 to 12.

[0009] A work table with a worktop for mounting tools is proposed in accordance with the invention, wherein

the worktop exhibits at least one or a plurality of recesses, and arranged in each case in each recess is a worktop segment that is rotatably mounted in the worktop about an axis of rotation running parallel with the upper surface of the worktop;

the work table comprises devices for locking the worktop segment in the worktop;

the worktop segment in the area of the axis of rotation is mounted in each case in two guides embodied on the work table; and

the worktop segment is capable of displacement alone or with the axis of rotation along the guides parallel with the upper surface of the worktop.

[0010] In a first embodiment of the work table in accordance with the invention, in the locked state the upper surface of the worktop segment and the upper surface of the worktop together form a single plane. In this embodiment, the axis of rotation is arranged in the plane of the worktop.

[0011] The work table in accordance with the invention thus makes it possible for a (first) tool, which is attached to the upper surface of the worktop segment, to be moved by causing it to rotate through 180° about the axis of rotation to a position under the work table.

Through this rotating movement, the previous upper surface of the worktop segment becomes the under surface, and vice versa. The external surface of the worktop segment, which is then rotated upwards, can then be utilized depending on the requirements of the user. If no addition tool is mounted on this external surface, it is available as an unobstructed work surface. By further rotation of the worktop segment, the (first) tool can be moved upwards, as a result of which it is once again ready for use.

[0012] The "folding down" of tools in this way thus permits a clearly improved utilization of the space available. If, for example, a clear work surface is required to enable constructional drawings to be laid out, all of the tools can be rotated downwards, wherein the previous, clear under surfaces of the worktop segments are rotated upwards. The tools are removed from the work surface of the work table in this way, so

that the entire surface of the work table can now be used freely.

[0013] The work table in accordance with the invention permits significantly better utilization of the space available. This also offers advantages in conjunction with the installation of extraction systems, which, because of the more compact arrangement of the tools, only need to exhibit a small effective area. Furthermore, the work table in accordance with the invention is capable, if the table legs are of folding execution, of being transported more easily in vehicles, given that on-site use is otherwise only possible with tools that are capable of being transported separately.

[0014] In the first embodiment, the devices for locking the worktop segment in the worktop are preferably executed as locking levers, wherein

at least two locking levers are provided for every worktop segment, and

every locking lever exhibits a first position and a second position, in which first position the worktop segment is capable of rotating in the work table (unlocked state of the worktop segment), and in which second position the worktop segment is locked in the worktop (locked state of the worktop segment).

[0015] A first edge of the worktop segment in the locked state is appropriately part of an outer edge of the worktop. In this case, the recesses are executed with a U-shaped form in the worktop, so that larger tools, which are attached to the worktop segment, can also readily be rotated upwards or downwards. This would not necessarily be the case for square or rectangular recesses, i.e. recesses that are arranged in the worktop without a common outer edge.

[0016] The first edge of the worktop segment preferably exhibits a first groove, wherein the second edge of the worktop segment lying opposite this first edge exhibits a second groove, and the worktop exhibits a web, which is complementary to the first and second grooves. The web in this case is executed on the edge of the worktop, which in the locked state of the worktop segment is adjacent to the second edge of the worktop segment, and in the locked state engages in the second groove, whereas in the unlocked state the engagement between the web and the second groove is released.

[0017] The axis of rotation must not necessarily be executed as a transcurrent axis. On the contrary, the two ends of the axis of rotation are preferably executed as bolts, which on the one hand are anchored in the worktop segment and on the other hand are supported in the guides.

[0018] In a second embodiment of the present invention, the upper surface of the worktop segment in the locked state is arranged parallel with the upper surface of the worktop, wherein

the worktop segment is present either in a first plane or in a second plane;

the second plane runs below the first plane in relation to the height of the work table;

the upper surface of the worktop segment and the upper surface of the worktop form a plane if the worktop segment is present in the first plane; and

the upper surface of the worktop segment is present below the upper surface of the worktop in relation to the height of the work table if the worktop segment is present in the second plane.

[0019] In this embodiment, the axis of rotation is arranged beneath the first plane of the worktop. The guides, in which the axis of rotation is mounted, are preferably executed as so-called indexable blocks, which are arranged on the under surface of the worktop or on the work table in the area of the stand elements underneath the worktop.

[0020] The distance between the first plane and the second plane is preferably variable. This is preferably achieved by displacing the axis of rotation running parallel with the surface of the worktop vertically in relation to the worktop. The indexable blocks, in which the guides are present, are preferably displaced upwards or downwards in addition, wherein the indexable blocks can be moved upwards or downwards for this purpose, for example, along a screw thread.

[0021] This second embodiment has the advantage that the worktop segment is capable of being locked at different heights. Larger items of equipment, for example, which would otherwise require to be mounted on a lower table, can also be positioned readily in this way on the work table in accordance with the invention.

[0022] Similarly, as in the first embodiment, the devices for locking the worktop segment in the worktop are embodied as locking levers, wherein, however

at least four locking levers are provided for each worktop segment;

two first locking levers are arranged in the first plane, and two second locking levers are arranged in the second plane;

each working lever exhibits a first position and a second position, in which first position the worktop

segment is capable of rotating in the work table (unlocked state of the worktop segment), and in which second position the worktop segment is capable of being locked to the work table (locked state of the worktop segment); and

the worktop segment is either locked in the first plane by means of the first locking lever, or is locked in the second plane by means of the second locking lever.

[0023] The second locking levers are appropriately secured to the work table by means of a first securing element. These first securing elements and with them the second locking levers should be capable of being folded under the table, wherein they can be unfolded if they are required for the purpose of locking the worktop segment in the second plane.

[0024] If the distance between the first plane and the second plane changes, the distance between the first securing element and the under surface of the worktop must also be changed, so that the second locking levers are present in the second plane.

[0025] A first edge of the worktop segment in the locked state in the first plane preferably forms a part of the outer edge of the worktop.

[0026] The first edge of the worktop segment appropriately exhibits a first groove, wherein the second edge of the worktop segment lying opposite this first edge exhibits a second groove, and the worktop exhibits a first web which is complementary to the first groove and the second groove,

wherein the first web is arranged in the edge of the worktop, which, when the worktop segment is in the first plane, in the locked state of the worktop

segment, is adjacent to the second edge of the worktop segment, and wherein

the web engages in the second groove in the locked state, when the worktop segment is in the first plane, and in the unlocked state the engagement between the web and the second groove is released.

[0027] Furthermore, the work table in this case should exhibit for each worktop segment a second securing element with a second web, which runs parallel with the first web in the second plane, so that the first groove engages in the second web after rotating the worktop segment through 180°.

[0028] Thus, when the worktop segment is present in the second plane, in the locked state of the worktop segment, the second web is adjacent to the second edge of the worktop segment, wherein, in the locked state, the second web, if the worktop segment is present in the second plane, engages in the first groove, and in the unlocked state the engagement between the second web and the first groove is released.

[0029] If the distance between the first plane and the second plane changes, the distance between the second securing element and the under surface of the worktop must also be changed, so that the second web is present in the second plane.

[0030] The axis of rotation must not necessarily be executed as a transcurrent axis. On the contrary, the two ends of the axis of rotation are preferably executed as bolts, which on the one hand are anchored in the worktop segment and on the other hand are supported in the guides, for example the indexable blocks.

[0031] A plurality of worktop segments is preferably provided in both embodiments. The length and width of the worktop segments may differ one from the other. Furthermore, both worktop segments according to the first embodiment and segments of the second embodiment can be combined in a single work table.

[0032] In both embodiments, each worktop segment preferably exhibits four locking grooves for the purpose of locking the same, wherein in the locked state two locking levers in each case are in engagement with the locking grooves of the worktop segment. The locking levers which are provided in the first embodiment, and the locking levers which are provided in the first plane of the second embodiment, are preferably let into the outer edge of the worktop. The grooves of the worktop segments are designed in such a way in this case that the part of the locking lever that is present in the grooves can be pulled out of the grooves of the worktop segment in each case in the locked state, so that the engagement of the locking levers in the locking grooves is released and the worktop segment is then capable of being rotated.

[0033] The locking grooves are appropriately executed on the first edge and the second edge of the worktop segment, wherein the first groove and the second groove are able to graduate into the locking groove. In the case of the first embodiment, the locking lever is initially in engagement with both of the grooves on the first edge in the locked state. In order to rotate the worktop segment through 180°, the locking lever is released, the rotation is performed, and the locking lever is then locked in the second edge, which is now a part of the outer edge of the worktop. This process is reversible.

[0034] In the case of the second embodiment, both of the first locking levers, when the worktop segment is

in the first plane, are initially in engagement with both of the grooves on the first edge in the locked state. In order to rotate the worktop segment through 180°, the locking levers are released, the rotation is performed, and both of the second locking levers are then locked in the second edge, which is now a part of the outer edge of the worktop. This process is reversible.

[0035] Both embodiments of the work table in accordance with the invention are explained in more detail below in relation to examples, wherein reference is made to the accompanying drawings, in which:

Fig. 1 depicts a work table in accordance with the invention with worktop segments viewed from above at an angle;

Fig. 2 depicts the worktop of the work table illustrated in Fig. 1 viewed from above at an angle;

Fig. 3 depicts only the worktop segments of the work table illustrated in Fig. 1 as an exploded view;

Fig. 4 depicts the work table illustrated in Fig. 1 as a view from the side;

Fig. 5 depicts the work table illustrated in Fig. 1 as a second view from the side;

Fig. 6 depicts the work table illustrated in Fig. 1 as a second view from the side;

Fig. 7 depicts the worktop of the work table illustrated in Fig. 1 in a further view from above at an angle;

Fig. 8 depicts a representation in principle of the rotating mechanism of a worktop segment according to the first embodiment in accordance with the invention;

Fig. 9 depicts a representation in principle of the rotating mechanism of a worktop segment according to the second embodiment in accordance with the invention; and

Fig. 10 depicts a representation in principle of a locking lever.

[0036] The work table 1 depicted in Figures 1 and 4 to 6, exhibits a worktop 2, which is supported on table legs 3. Recesses 4 (Fig. 2), in which worktop segments 5 are arranged, are executed in the table top. The worktop segments are arranged in the first plane in each case in Fig. 1, so that the upper surface of the worktop segments 5 and the worktop 2 constitute a single plane. Second locking levers 7 are attached to the under surface of the worktop 2 via first securing elements 20, which, when all the worktop segments 5 are in the first plane, are folded inwards. The second locking levers 7 can be folded outwards (indicated by broken lines) when the worktop segment 5.2 is to be rotated into the second plane. For this purpose, the worktop segment 5.2 is caused to rotate on an axis of rotation, which is supported in the indexable blocks 8. The indexable blocks 8 are also attached to the under surface of the worktop 2.

[0037] Skids 9 and rollers 10 are executed at the lower end of the table legs 3. The rollers 10 can be extended and retracted via a folding mechanism 11. With the rollers in the extended state, the work table can be moved and thus readily displaced as a whole.

[0038] The worktop 2 depicted in Fig. 2 exhibits first webs 12, guides 14 and locking grooves 17 in the area of the recesses. In the locked state, the web 12 engages in the second groove 16 (Fig. 3, Fig. 8, Fig. 9) when the worktop 2 is in the first plane. In this way, the worktop 2 is locked additionally to the locking devices in its position in each case. Indexable blocks 8 and second securing elements 21 with second webs 13, by means of which vertically adjustable worktop segments in accordance with the second embodiment of the present invention can be realized, are executed in addition on the under surface of the worktop 2. The first groove 16 engages in the second webs when the worktop segment 5.2 is in the second plane in the locked state.

[0039] The first 20 and the second 21 securing elements and the indexable blocks 8 are each secured to the under surface of the worktop 2 via threaded rods, so that they can be screwed upwards or downwards.

[0040] The worktop segments 5 can be of any desired design, provided that they exhibit the characteristics described above, they completely occupy the recesses 4 in the worktop 2 in particular, and they exhibit the proposed grooves and axes of rotation. According to Fig. 3, worktop segments 5 are constructed in three layers in an advantageous variant: with a first cover plate 22, to the upper surface of which a frame 23 is applied. The surface of the frame 23 facing away from the cover plate 22 is covered by a second cover plate 24. The necessary first and second grooves can be readily executed through this construction of the worktop segments, in that the frame 23 in relation to the first and second edge of the work place segment 5 is executed offset towards the interior.

[0041] Two indexable blocks 8 and a second securing element 21 with a second web 13 are executed for the

worktop segments 5.2 in accordance with the second embodiment in each case on the under surface of the worktop 2. The first securing element 21 is arranged in a U-shaped recess 4 for this purpose at the base of the "U", whereas an indexable block 3 is provided in each case at each leg of the "U" (see in particular Fig. 7). Devices of this kind are not required for worktop segments 5.1 in accordance with the second embodiment, wherein the worktop segments 5.1 are not vertically adjustable, but are only rotatable.

[0042] A worktop segment 5.1 can be rotated as follows in its recess 4 in the worktop 2 (Fig. 8):

[0043] 1. Locked position: In Fig. 8a the worktop segment 5.1 is locked in the recess 4, wherein the first web 12 of the worktop 2 is in engagement with the groove 16. A tool 27 is secured on the under surface of the worktop segment 5.1. The upper surface of the worktop segment 5.1 and the upper surface of the worktop 2 form a plane. The first locking levers 6 engage in the locking grooves 17 of the worktop segment 5.1, which are executed in the groove 15. For the purpose of rotating the worktop segment 5.1, the locking levers 6 are released and the worktop segment 5.1 is pulled in the direction of the arrow, wherein the engagement between the first web 12 and the groove 15 is released.

[0044] 2. Rotation position: The state illustrated in Fig. 8b, in which the original position of the tool is represented by broken lines, is achieved by pulling. Pulling also causes the axis of rotation (realized by two bolts as a general rule) to be drawn along the guides 14 (Fig. 7) over a segment arc 29 from the locked position into the rotation position. The segment arc is of arc-shaped embodiment, in order to prevent the undesired return of the worktop segment from the rotation position into the locked position. Pulling the

worktop segment from the locked position into the rotation position causes the arc of the segment arc of spring-like execution to be pushed downwards, so that such a positional change can be completed without the expenditure of high force, although only when at least a certain level of tensile force is utilized.

[0045] 3. Rotation: In the rotation position, the worktop segment 5.1 is rotated through 180° in the direction of the arrow (Fig. 8c), wherein the previous under surface of the worktop segment 5.1 adopts an upward-facing position.

[0046] 4. Locked position: The rotation position is left by pushing the worktop segment 5.1 in the direction of the arrow (Fig. 8d), and the worktop segment 5.1 again arrives in a locked position, wherein the tool 27 is now present on the upper surface of the worktop segment 5.1. The first web 12 is in engagement with the groove 15 of the worktop segment 5.1, so that a locked position has been achieved. At the same time, pushing in the direction of the arrow causes the axis of rotation to be displaced along the guides 14 from the rotation position into the locked position on the segment arc 29. The (henceforth) upper surface of the worktop segment 5.1 and the upper surface of the worktop 2 in turn form a plane. The first locking levers 6 engage in the locking grooves 17 of the worktop segment 5.1, which are executed in the groove 16.

[0047] A further rotation of the worktop segment 5.1 from this position into the original position is possible without difficulty.

[0048] A worktop segment 5.2 can be rotated as follows in its recess 4 in the worktop 2 (Fig. 9):

[0049] 1. Locked position: In Fig. 9a the worktop segment 5.2 is locked in the recess 4 in the first plane, wherein the first web 12 of the worktop 2 is in engagement with the groove 16. The axis of rotation 28 of the worktop segment 5.2 is supported in indexable blocks 8. The axis of rotation 28 is rigidly connected to the worktop segment 5.2 via two flanges 30. Each indexable block 8 exhibits a segment arc 29. The upper surface of the worktop segment 5.2 and the upper surface of the worktop 2 form a plane. The first locking levers 6 engage in the locking grooves 17 of the worktop segment 5.2, which are executed in the groove 15. For the purpose of rotating the worktop segment 5.2, the worktop segment 5.2 is pulled in the direction of the arrow, wherein the engagement between the first web 12 and the groove 16 is released. The second locking levers 7 are in a retracted position. They are folded outwards (broken line) before pulling.

[0050] 2. Rotation position: The state illustrated in Fig. 9b is achieved by pulling. Pulling also causes the axis of rotation 28 (realized by two bolts as a general rule) to be drawn along the indexable blocks 8 over the segment arc 29 from the locked position into the rotation position. The segment arc is of arc-shaped embodiment, in order to prevent the undesired return of the worktop segment from the rotation position into the locked position. Pulling the worktop segment 5.2 from the locked position into the rotation position causes the arc of the segment arc 29 of spring-like execution to be pushed downwards, so that such a positional change can be completed without the expenditure of high force, although only when at least a certain level of tensile force is utilized.

[0051] 3. Rotation: In the rotation position, the worktop segment 5.2 is rotated through 180° in the direction of the arrow (Fig. 9c), wherein it moves from the first plane into the second plane, and the previous

under surface of the worktop segment 5.1 now forms the upper surface.

[0052] 4. Locked position: The rotation position is left by pushing the worktop segment 5.2 in the direction of the arrow (Fig. 9d), and the worktop segment 5.2 once more arrives in a locked position, wherein it is now present on the second plane. The second web 13 is in engagement with the groove 15 of the worktop segment 5.2, so that a locked position has been achieved. At the same time, pushing in the direction of the arrow causes the axis of rotation to be displaced along the indexable blocks 8 from the rotation position into the locked position on the segment arc 29. The second locking levers 7 engage in the locking grooves 17 of the worktop segment 5.2, which are executed in the groove 16. A further rotation of the worktop segment 5.2 from this position in the second plane into the position in the first plane is possible without difficulty.

[0053] Each of the first and second locking levers is supported in a rotatable fashion on a strut 31 (Fig. 10). The locking lever exhibits a laterally reversed, integrated sliding block 35 with retaining hooks 32, onto which pressure is exerted by means of a spring 33. The retaining hook 32 is in engagement with a retaining plate 34, which is attached to the locking groove 17 by one external leg. The spring 33 prevents the undesired release of the retaining hook 32 from the retaining plate 34 and thus the locking lever from the locking groove 17. The locking lever is withdrawn from the locking groove 17 in order to release the locking between the worktop segment 5 and the worktop 2, wherein, by pushing the sliding block 35, the retaining hook 32 moves out of engagement with the retaining plate 34. In order to lock the worktop segments 5 to the worktop 2, the locking lever 7 is pushed into the

locking groove 17, wherein the retaining hook 32 enters into engagement with the retaining plate 34.

List of reference designations used

1	work table
2	worktop
3	table leg
4	recess
5	worktop segment
5.1	worktop segment as in the first embodiment
5.2	worktop segment as in the second embodiment
6	first locking lever
7	second locking lever
8	indexable block
9	skid
10	roller
11	roller extending/retracting mechanism
12	first web
13	second web
14	guides
15	groove of worktop segment
16	additional groove of worktop segment
17	locking groove
20	first securing element
21	second securing element
22	first cover plate
23	frame
24	second cover plate
25	edge of worktop segment
26	further edge of worktop segment
27	tool
28	axis of rotation
29	segment arc
30	flange
31	strut
32	retaining hook
33	spring
34	retaining plate
35	sliding block